

June 11, 2021

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VIA Electronic Filing

The Honorable Jocelyn G. Boyd
Chief Clerk/Administrator
Public Service Commission of South Carolina
101 Executive Center Drive
Suite 100
Columbia, SC 29210

Re: South Carolina Energy Freedom Act (House Bill 3659) Proceeding Related to S.C.
Code Ann. Section 58-37-40 and Integrated Resource Plans for Dominion Energy South
Carolina, Incorporated, Docket No. 2019-226-E

Dear Ms. Boyd:

By Order No. 2021-94, dated March 15, 2021, issued in the above-referenced docket, the Public Service Commission of South Carolina (the “Commission”) required Dominion Energy South Carolina, Inc. (“DESC” or “Company”) to provide the Commission and the South Carolina Office of Regulatory Staff (“ORS”) an update within ninety (90) days from the date of the 2020 IRP Order on the status and involvement parties within the stakeholder process and thereafter on a semi-annual basis. In compliance with the Order, DESC provides the Commission and ORS with the following update.¹

In late 2020, DESC retained Charles River Associates (“CRA”) to design and implement a robust integrated resource plan (“IRP”) advisory group process. CRA facilitated the initial IRP

¹ Unless instructed otherwise, the Company will continue to file future updates on a semi-annual basis. Accordingly, DESC will file its next semi-annual update on or before December 11, 2021.



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Advisory Group meeting on February 16, 2021. A subsequent meeting of the IRP Stakeholder Advisory Group was held on April 12, 2021. Invitees to the meetings included:

- Office of Regulatory Staff
- SC Energy Office
- Coastal Conservation League
- SC Small Business Chamber of Commerce
- SC Office of Economic Opportunity
- SC Energy Users Committee
- SC Community Action Partnership
- Southern Alliance for Clean Energy
- Johnson Development Associates, Inc.
- South Carolina Solar Business Alliance
- Sierra Club
- AARP South Carolina
- Walmart, Inc.

The February 16, 2021 IRP Advisory Group Meeting

During the February 16, 2021 IRP Advisory Group meeting, the principal agenda items were (a) a review of the results of the DSM Rapid Assessment as mandated in the Order No. 2020-832 (the “2020 IRP Order”); (b) a review of the Modified 2020 IRP as being filed with the Commission; (c) an initial review and assessment of the selection criteria for DESC’s new resource optimization software model; and (d) the plans to establish an effective stakeholder process for the 2021 and 2022 IRP updates.

The meeting was a planning meeting primarily focused on roles, feedback processes, cadence of meetings, schedule and topic identification. The meeting lasted approximately three hours. Detailed minutes of the February 16, 2021 IRP Advisory Group Meeting and the presentation slides used at the meeting are attached to this letter as Appendix A and Appendix B.

DSM Issues

During the February 16, 2021 IRP Advisory Group Meeting, DESC reviewed the rapid assessment (the “Rapid Assessment”) which its energy efficiency and demand side management (“DSM”) consultant, ICF, had prepared beginning in November 2020. The purpose of the Rapid Assessment was to determine if DESC’s DSM portfolio could be expanded to achieve a 1% level of energy savings in 2022, 2023, and 2024 as the Commission ordered.



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The initial version of Rapid Assessment focused on the specific program expansion suggestions presented by Dr. David Hill during the IRP hearing. Dr. Hill was a witness representing Southern Alliance for Clean Energy (“SACE”) and South Carolina Coastal Conservation League (“SCCCL”). The Company presented the initial Rapid Assessment, in draft form, to the Energy Efficiency Advisory Group which is the stakeholder group which consults with the Company on DSM programs. There is substantial overlap in membership between the two advisory groups.

At the February 16, 2021 IRP Advisory Group Meeting, DESC informed the IRP Advisory Group that after consultation with the Energy Efficiency Advisory Group, the Company had instructed ICF to expand the rapid assessment to include potential changes beyond those suggested by Mr. Hill. DESC explained to the IRP Advisory Group that this expanded rapid assessment would be appended to the Modified 2020 IRP and would be available when it was filed. At the February 16, 2021 meeting, DESC presented a detailed assessment of all programs considered in the expanded rapid assessment, the comparative data on the effectiveness of those programs in other jurisdictions and the reasons why specific programs were chosen to be part of the expansion or found not to be cost effective or feasible in DESC’s service territory if included.

In addition, at the February 16, 2021 meeting DESC discussed the plans and schedules related to the comprehensive DSM potential study that it is undertaking for inclusion in the 2023 IRP filing (the “Potential Study”). The Potential Study will identify the maximum energy efficiency potential in DESC’s service territory as well as the suite of programs that are determined to be cost effective and practical to implement to best capture that potential. The Potential Study will involve a far more comprehensive and thorough evaluation of DSM potential than is possible with a rapid assessment and will be based on updated market and program data. The scoping, market research and preparation of a comprehensive DSM potential study typically requires approximately two years to complete.

To satisfy the requirements of the 2020 IRP Order, the Potential Study and DSM program expansions and revisions that result from it will be prepared on a timetable to allow it to be included in the 2023 IRP filing. At the February 16, 2021 meeting, DESC informed the IRP Advisory Group that the scoping of the new Potential Study will take place in consultation with the Energy Efficiency Advisory Group during the late spring or early summer of 2021. An RFP for the study will be issued later in the summer of 2021 and that the study itself will be kick off in the third quarter of 2021.



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Selection of a Capacity Expansion Model

As indicated in testimony in the 2020 IRP proceeding, since 2019 DESC has been in the process of implementing a sophisticated capacity expansion software suite, PLEXOS, that can optimize the selection and timing of generation capacity additions under each planning scenario modeled. PLEXOS software is used by utilities, regulators, environmental groups and consultants worldwide. As also indicated in testimony, the PLEXOS software system seamlessly supports long-term system planning studies, weekly, daily and hourly portfolio dispatch runs for scheduling its generating units, and risk analyses conducted across Dominion Energy's operating units.

During the February 16, 2021 IRP Advisory Group Meeting, CRA summarized the Commission criteria for capacity expansion modeling and specific stakeholder concerns as set forth in the 2020 IRP Order. With DESC, CRA reviewed the functions and capabilities of the PLEXOS model and mapped PLEXOS's attributes to the criteria and concerns set out in the 2020 IRP Order.

The IRP Advisory Group was then asked to provide input regarding other options that its members would like to see reviewed in a comparative evaluation of software packages against the Commission criteria, as well as any additional features and capabilities that they deemed important in the software to be selected. CRA informed the group that this information will be used to prepare a comprehensive comparison of options to be presented in future meetings of the IRP Advisory Group.

DESC then provided the group with an overview of DESC's current PLEXOS implementation project (which is now largely completed) as well as a review of IRP modeling requirements and how DESC views PLEXOS' ability to meet these needs. DESC also responded to concerns that the stakeholders expressed at the IRP hearing concerning the use of PLEXOS and showed that certain concerns the stakeholders' witnesses expressed at the IRP hearing had been addressed in more current versions of the software.

At multiple points during the February 16, 2021 meeting, CRA solicited feedback from the IRP Advisory Group concerning the selection criteria and process for selecting capacity expansion software. The IRP Advisory Group was asked to view a criteria matrix which CRA prepared as a means to compare each candidate software package's ability to meet the criteria and concerns listed in the 2020 IRP Order. Then IRP Advisory Group members were asked to verify whether any software model options were omitted and whether any additional criteria should be included. As homework after the meeting, the IRP Advisory Group members were encouraged to populate the cells in the matrix and asked to note if they believed that certain models had specific



deficiencies or strengths. The IRP Advisory Group was provided three weeks to provide their input on the matrix.

Stakeholder Process for 2021-2022 DESC IRP Updates, Pace, and Timing of Meetings

During the February 16, 2021 IRP Advisory Group Meeting, CRA presented its approach to building stakeholder consensus through a stakeholder process. That approach involves addressing each key topic multiple times at successive meetings on a topic-by-topic basis. This ensures that full engagement is achieved in the process leading toward consensus and fully-considered feedback is elicited. Under this approach, topics are often surfaced or discussed in general terms at one meeting, with time for members to more fully consider the matters before they are discussed in more depth in subsequent meetings. Under CRA's approach, all issues to be discussed are prioritized based on input from the stakeholders so that there is appropriate time for fully deliberating each concern while focusing on the issues that are most important to the members first.

During the February 16, 2021 IRP Advisory Group Meeting, CRA proposed a timeline and agenda items for meetings leading up to the filing of the 2021 IRP update. The agenda items included topics that were identified in the 2020 IRP Order as items to be addressed in future stakeholder meetings or IRPs. These topics included the changes to the methodologies used to develop, analyze, and select resources in future IRP analyses as mandated in the 2020 IRP Order. A detailed list of the items in question and DESC's proposed response to them was provided in the presentation materials for the meeting.

CRA then requested feedback from the IRP Advisory Group concerning this list of issues and how these issues should be prioritized for further review and discussion. CRA explained it will do any necessary research concerning each issue, lay out the options, and give homework to the IRP Advisory Group to react to the information in anticipation of a full discussion at a future meeting. In many cases, these issues have been addressed in other jurisdictions where DESC operates and a body of information already exists concerning them. CRA will work with DESC to assist in framing the issues based on how these matters were addressed in other jurisdictions. To further facilitate the IRP process, a dedicated website was created whereby the IRP Advisory Group members can submit additional questions and view relevant materials, such as the presentations, appendix materials, and meeting minutes. The website includes an online question and answer function for the members of the IRP Advisory Group and those questions and corresponding answers up to the present filing are attached as Appendix C.



The April 12, 2021 IRP Advisory Group Meeting

The second IRP Advisory Group meeting was held April 12, 2021 following receipt of comments on the issues raised at the close of the February 16, 2021 IRP Advisory Group meeting and comments on the proposed agenda and prioritization of issues. The meeting lasted approximately five hours. Detailed minutes of the April 12, 2021 meeting and the presentation slides used at the meeting are attached to this letter as Appendix D and Appendix E.

Review: Stakeholder Homework & Prioritization of Discussion Topics

At the April 12, 2021 meeting, CRA reviewed the feedback received from the IRP Advisory Group concerning the meeting process and presented responses to that feedback in writing in the presentation slides for the meeting. The issues in question related to

1. The means of asking questions during virtual meetings,
2. The timing and flow of information and background materials,
3. The relationship between the work of the IRP Advisory Group and the Energy Efficiency Advisory Group, and
4. The process for identifying topics for discussion and presenting alternative points of view.

The actions to be taken in response to each item were documented in the presentation slides.

CRA then presented (a) the revised matrix for evaluating resource optimization software showing that the additional software models and evaluation criteria suggested by the IRP Advisory Group members had been added, and (b) a ranking of topics for consideration at the current and future meetings based on a tabulation of the responses provided by the IRP Advisory Group as part of their post-meeting homework. The agenda for the April 12, 2021 meeting directly reflected the feedback from the IRP Advisory Group on the sequencing and priorities of meeting topics.

SC PSC Order No. 2020-832 2021 IRP Update Requirements

DESC presented a detailed matrix listing by topic each new IRP requirement mandated by the 2020 IRP Order and indicating whether the Commission mandated the change to be instituted in the 2020 Modified IRP, the 2021 or 2022 IRP Updates or the 2023 IRP. The matrix showed that all requirements to be instituted in the 2021 IRP Update were fully incorporated in the 2020 Modified IRP. Accordingly, the 2021 IRP Update will reflect an updating of the analysis shown



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in the 2020 Modified IRP. DESC asked for feedback concerning whether the matrix properly reflected the allocation of requirements among future IRPs and updates.

Resource Optimization Software Models: Review of Stakeholder Input, Proposed Models, and Criteria

CRA reviewed the feedback provided by IRP Advisory Group members in response to the discussion of the evaluation process for selecting resource optimization software that was initiated in the February 16, 2021 IRP Advisory Group Meeting. At the close of that meeting, CRA has made a specific request for additional feedback on model selection criteria and suggestions for additional models to be evaluated. CRA then contacted each IRP Advisory Group members who provided input and conducted a phone call with that member, typically of approximately 45-minutes duration. The purpose of the call was to explore the input received and ensure that the members' suggestions were accurately understood and fully reflected in the evaluation matrix.

Reviewing the 2020 IRP Order, CRA identified twenty-four mandatory evaluation criteria that a resource optimization software model would be required to meet. CRA also identified additional features related to those twenty-four mandatory features that could give a particular model an advantage over alternatives that lacked those features. CRA presented these mandatory and beneficial ("nice-to-have") criteria in a matrix/scorecard that was discussed at the April 12, 2021 meeting (the "Commission Criteria").

CRA then presented a set of presentation slides showing twenty-one additional evaluation criteria that the IRP Advisory Group members had suggested in their feedback. Of these, CRA determined that twelve were already covered by the Commission Criteria (either mandatory or nice-to-have) and mapped those twelve suggested evaluation criteria to the analogous entries in the Commission Criteria. The remaining eight evaluation criteria were listed as Stakeholder Criteria. This resulted in two scorecards, one for twenty-four Commission Criteria and the other for eight additional Stakeholder Criteria.

CRA then reviewed the screening process used to shortlist candidate models for further consideration. The sixteen suggested models were screened to determine if (1) the model was commercially available currently, (2) the model performed both capacity expansion and portfolio analysis functions as a single package, and (3) the model was able to meet each of the twenty-four mandatory functional requirements laid out by the Commission. After this screening, five candidate models were left for further consideration: PLEXOS AURORA, PowerSIMM, EnCompass, and E7.



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CRA described its approach to the next stage of the model evaluation, noting that replacing PLEXOS was possible but would be disruptive and interfere with the timetable for use of resource optimization software in the 2023 IRP. Any replacement for PLEXOS would need to perform all of key functions for which DESC will use PLEXOS, which include resource optimization for capacity expansion planning and portfolio optimization, as well as dispatch functions and risk analysis.

For those reasons, the evaluation was conducted under the assumption that to justify switching to another model, PLEXOS must be shown to have important shortcomings concerning key model criteria. The alternative must be shown to perform materially better concerning those criteria, while also meeting all other requirements.

CRA then provided an overview of the structure and key features of each of the five short-listed models (PLEXOS, AURORA, ABB E7, EnCompass, and PowerSIMM) and described how they differed from one another. It presented an evaluation matrix listing the functions and capabilities of each of the short-listed models against the non-mandatory or “nice-to-have” Commission Criteria. The review indicated no major “fails” for the five candidate models including PLEXOS. The analysis showed that PLEXOS is capable of meeting all of the mandatory and non-mandatory Commission criteria.

CRA then reviewed each of the criteria listed in the Stakeholder Criteria and described differences between the models and how they perform against the functionalities suggested by IRP Advisory Group members. Again, there were no functional “fails” for PLEXOS across the suggested criteria.

CRA noted that none of the IRP Advisory Group members responded in their feedback that they believed that PLEXOS was incapable of functions required by the Commission. However, certain members did raise questions about PLEXOS’s transparency and whether the project-based license offered by its owner, Energy Exemplar, would meet intervenors’ needs.

In response to this concern, CRA reviewed the intervenor licenses for PLEXOS offered by Energy Exemplar and how these licenses had been used successfully in other IRP processes. CRA outlined examples where Energy Exemplar intervenor licenses had been used successfully in proceedings involving PacifiCorp and AEP, and compared them to similar use of intervenor licenses for the AURORA software package made available in proceedings involving Idaho Power.



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DESC is currently working with Energy Exemplar to modify its existing intervenor license to respond to intervenor concerns. These concerns include requests to allow intervenors the ability to perform their own modeling runs in the same software package as DESC in future IRP proceedings as directed by the Commission. DESC agreed to take up a number of additional concerns in its negotiations with Energy Exemplar that were voiced by IRP Advisory Group members at the meeting.

On this basis, DESC informed the IRP Advisory Group members that it plans to continue developing the PLEXOS model for IRP use in the 2021 and 2022 Update. DESC is already using the ST Plan PLEXOS module (production cost) for calculating the avoided cost in Docket No. 2021-88-E and is developing the model for full use of the LT Plan module (long-term resource optimization) in the 2022 IRP Update.

Mini-Max vs. Other Risk Metrics

The Mini-Max Regret metric is based on the difference in the net present value (“NPV”) costs generated by a given resource plan compared to the NPV of the competing portfolio with the lowest NPV under a given scenario. The sum of differences across all scenarios constitutes the Mini-Max Regret score for that resource plan. CRA highlighted the fact that this regret score was only one measure of risk and that others could be considered.

Examples of alternative risk metrics used by nearby utilities include the stochastic analysis (random sampling of risk) used by the Tennessee Valley Authority (“TVA”) in its 2019 IRP, and the sampling of specific scenario outcomes used by Duke Energy Carolinas in its 2020 IRP.

CRA noted that Duke Energy Carolina’s approach to risk analysis is similar to that used by DESC in the alternative Mini-Max Regrets analysis presented in its 2021 Modified IRP. The alternative DESC approach analyzed the risk of each resource plan against the most likely set sensitivities. CRA highlighted that the Duke approach is beneficial since it allows for observation of the worst portfolio outcomes under each scenario and noted that the range between the best (or mean) and worst outcomes are another measure of uncertainty that can be useful for observing the risk of bad outcomes for different potential portfolios.

CRA also described risk metrics that measure risks other than those related to cost risk including risks associated with reliance on purchased power or imports, or reliance on a single technology. CRA then sought input and suggestions from IRP Advisory Group members as to what additional risk metrics should be considered beyond Mini-Max Regret metric.



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Status of DESC's Retirement Analysis and Transmission Impact Analysis Request

DESC provided an update on the status of DESC's analysis related to the potential retirement of coal generating units. On April 6, 2021, DESC submitted a request to its Transmission Planning Group to study the transmission impacts of retiring the Wateree coal units. Wateree was selected as the initial retirement candidate due to its low capacity utilization and its location on the grid in an area that can more readily be supported by other generation resources. In addition to the transmission impact studies, the retirement studies will also include analyses to identify the need and cost of replacement generation and to identify the costs for site closure and environmental remediation and the retired plants. Because of its complexity, the transmission impact analysis is the long lead time component of DESC's retirement analysis.

In conducting its analysis, the Transmission Planning Group will estimate the costs and system impacts of each of these proposed replacement cases. Due to separation of functions requirements enforced by the Federal Energy Regulatory Commission ("FERC"), the transmission impact analysis must be performed independently from engagement with the generation planning team.

DESC emphasized that the retirement studies are being conducted with the goal of including their results in the 2023 IRP. The scenarios for replacing the coal generation are intended to define ranges of potential costs. They are not prescriptive and action will not be taken on them absent Commission review and approval.

Based on comments from the IRP Advisory Group members concerning the retirement analysis schedule, it was determined not to request transmission impact analyses for Wateree Station and Williams Stations in sequence as planned. Accordingly, on May 13, 2021, DESC sent a superseding transmission impact analysis request to the Transmission Planning Group asking that the Wateree and Williams retirement studies be undertaken simultaneously.

Overview of Session II Homework

CRA and DESC accepted comments or questions from the IRP Advisory Group and requested IRP Advisory Group members to provide feedback concerning issues including risk metrics that could be used in addition to Mini-Max Regret analysis, coal retirement study considerations, and PV solar capacity consideration for assessing PPA rates and operating considerations. The list of topics and questions that DESC specifically requested IRP Advisory Group members to address the following points:

- Topical Feedback: What other issues should be addressed in Session III?



- Model Evaluation Feedback: Did we achieve consensus that PLEXOS performs all required functions?
- 2021 IRP Inputs: Is approach consistent with Commission Order No. 2020-832, are there any gaps?
- Risk Metrics Feedback: What metrics, in addition to Mini-Max Regrets, should DESC evaluate with the expected outputs?
- Retirement Analysis: What other considerations should DESC study in addition to transmission impacts?
- Solar Winter Capacity: Does DESC approach to measuring solar winter capacity contribution to the IRP make sense? What other approach or value would you recommend that DESC should adopt?

The third IRP Advisory Group session is scheduled for June 28, 2021.

In sum, DESC believes that the IRP Advisory Group process is working well and is creating clarity around key issues related to future IRP filings. If you have any questions or need additional information, please do not hesitate to contact us.

Best regards,

Womble Bond Dickinson (US) LLP

/s/ Belton Zeigler
Belton Zeigler
Partner